

Project U16014

LiDAR Acquisition IL County of Bureau

Surdex Corporation Project # 2500905

April 2016

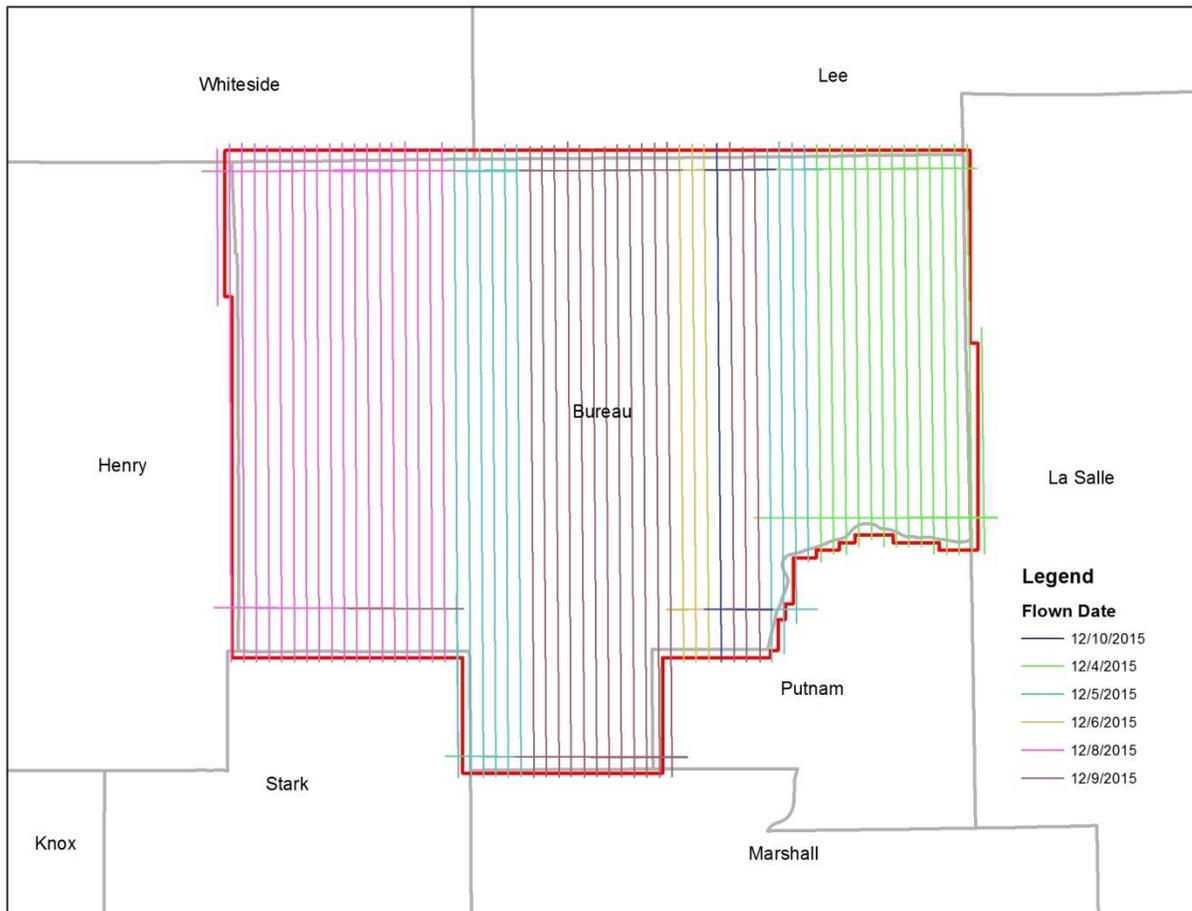


LIDAR Acquisition:

The Illinois project areas of Bureau County was fully covered by 2,000’ tiles in a State Plane IL West layout provided by the University of Illinois. Full tiles covering these counties areas were buffered for flight planning purposes. The following parameters were used in preparing the flight plan.

Flight altitude	Approximately 6397’ AMSL
Airspeed	150 knots
Full swath width	1,535 meters
Scan Rate	53.4 Hz
Sidelap	20.00%
Field of View	40 degrees
Nominal Post Spacing	0.67 meters
Max Pulse Repetition Rate	260 KHz
Returns per pulse	4 + intensity

LiDAR data was flown by Surdex Corporation between December 4 to December 9, 2015. Surdex utilized their twin engine Cessna 335 with a Leica ALS70-HP multi-pulse instrument and based their operations at three airports: IL Valley Regional and Kewanee Airports were used in order to keep the baseline distance to a maximum of 25 miles. The graphic below shows areas covered by each flight date. Perpendicular (east-west) lines indicate cross flights flown.



The flight crew was guided by a GPS controlled flight management system, which displayed the flight plan; including altitude, heading, cross track deviation and PDOP. During the flight mission, the system operator monitored flight management data and laser information, to ensure a successful mission.

Before and after each LiDAR mission, Surdex Corporation collected a perpendicular cross flight over lines collected during that lift. This process ensures the ability to compare point data collected in multiple directions for any indication of problems with the data.

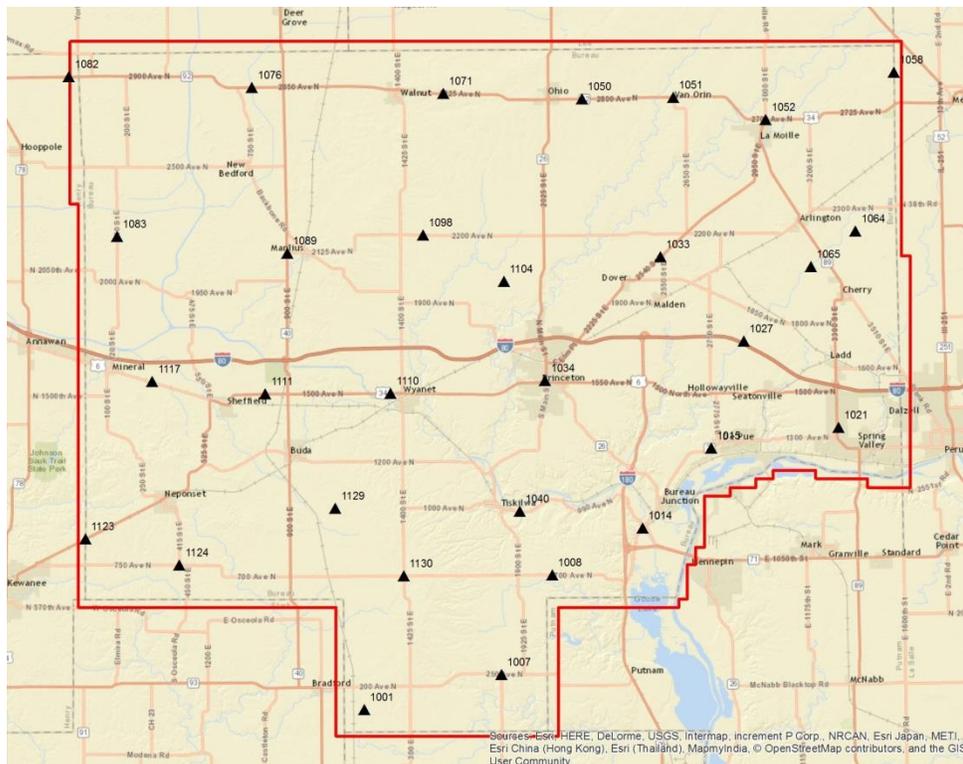
Surdex performed quality checks against all missions to ensure sufficient point coverage of all collected flight lines, review of intensity data and verification that all collected GPS-IMU data was within expected data quality ranges. All other initial processing yielded no issues and allows Surdex to progress into full processing and delivery.

Ground Survey

Surdex collected 30 survey ground control points across the county. This data was used to vertically adjust the LiDAR data, if necessary, once all bare earth classification macros have been successfully run.

Surdex has found the most success with ground control adjustment when evaluated exclusively against bare earth data. Although all points would receive the adjustment, performing the assessment at this stage ensures that low lying vegetation is not used to assess the vertical accuracy of the LiDAR data when determining how much of a vertical adjustment should be applied.

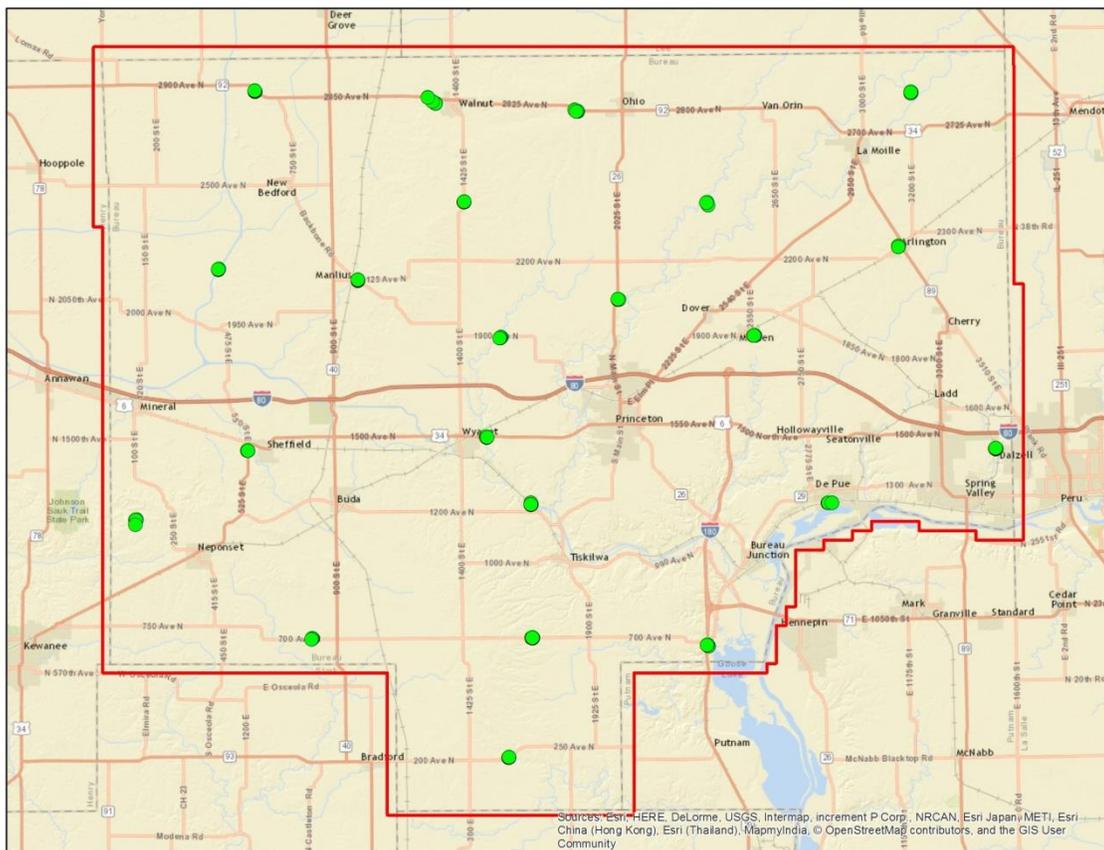
Here is an overview of the survey control collected for the project.



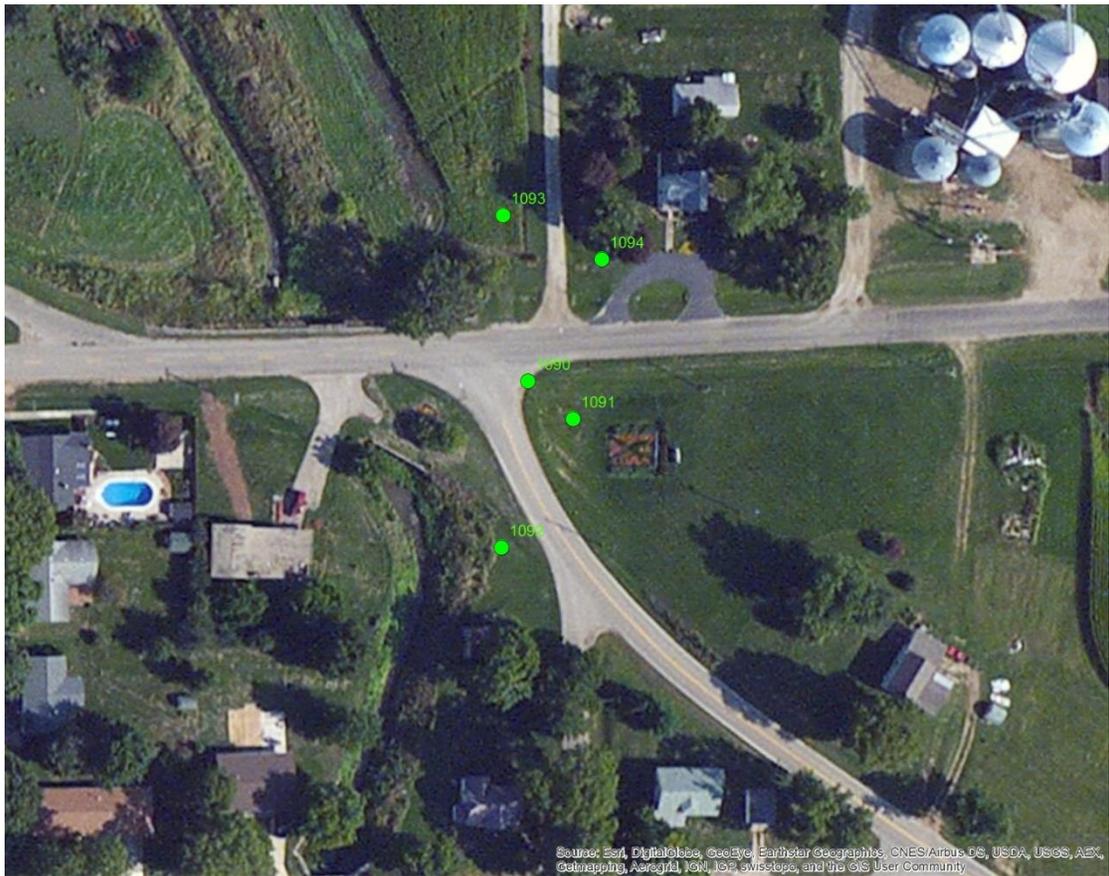
QC Check Points

Surdex has also completed field collection of over 100 QC points in State Plane IL West zone. This data will provide an independent evaluation of the processed LiDAR against all five ground cover classes – Bare Earth (BE), Short grass (SG), Tall grass (TG), Brush (B) and Tree-Forested (T). This process included collection of ground photos where possible, samples of ground photos in the various classes are included below. This data will be used for final completion of all project deliverables.

Overview of the point locations is shown below.



Sample of QC point cluster in Bureau County.



Sample ground photos of QC points by groundcover:

SHORT GRASS



TALL GRASS



Bare Earth



BRUSH



TREE-FORESTED

